Adaptation to Hand Injury: An Evolving Experience

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KEY WORDS
• hand therapy
• mixed design
• qualitative research

OBJECTIVES. Objectives of this study were to examine similarities and differences in physical recovery and psychosocial adaptation, engagement in occupations and relationships, perceived outcomes and expectations, and adaptive issues and strategies of 5 participants from an ongoing longitudinal study of adaptation to hand injury.

METHODS. Participants were tracked for 12 months using quantitative measures of physical recovery and psychosocial adaptation, and qualitative adaptation interviews focused on the impact of an injury experience in clients’ daily lives. A computerized graphic format documented changes over time in key quantitative and qualitative indicators in individual Adaptation Trajectories.

RESULTS. Findings included the importance of motivating occupations and relationships, changes over time in expectations for the future, and differences between independent and interdependent adaptive strategies following hand injury.

DISCUSSION. Connections between the International Classification of Functioning and Disability domains of body systems, activity capabilities, and social participation were examined. Findings support the value of individualized, occupation-based therapy that addresses the mind and spirit as well as physical recovery in occupational therapy practice with hand injury clients.


Outcomes of hand injury have typically been conceptualized and studied primarily as changes from onset to completion of various specific treatments (MacDermid, 2001). While useful in analyzing effects of selected interventions, this pretest–posttest analysis of change tells us little about how the process of adaptation evolves over time, and reflects outcomes valued by clinicians and researchers rather than the experience of persons with injury themselves. Many therapists recognize the clinical importance of engaging clients in therapy as their injury experience evolves (DeVore, 1990). However, a recent assessment of knowledge development in the field of hand therapy revealed a heavy emphasis on physical recovery based on straightforward measures of quantitative components, and relative lack of attention to psychosocial issues, a long-term view of outcomes, or the significance of the injury in clients’ daily lives (Brown, 1996). Single case studies provide a few exceptions that examine longer-term outcomes and document the client’s point of view (Patterson & Burke, 1995; Toth-Fejel, Toth-Fejel, & Hedricks, 1988).

The purpose of this article is to illustrate ways of documenting and studying adaptation to hand injury as an evolving process. It is based on an ongoing holistic study of the adaptive process that integrates quantitative indicators of physical and psychosocial recovery with a qualitative “insider’s perspective” of persons with disabling hand injuries (Spencer & Chan, 2002). Specific aims of the ongoing study are to examine how the process of adaptation evolves over time, and to iden-
tify personal and environmental factors that influence the adaptive process. This article will examine in depth the changing adaptive experience of five individuals from the 43-member database of the larger study and compare similarities and differences in physical recovery and psychosocial adaptation, engagement in valued occupations and relationships, perceived outcomes and expectations, and adaptive issues and strategies.

A theoretical framework for conceptualizing the process of adaptation was developed for the ongoing study based on the work of Batterham, Dunt, and Disler (1996) who articulated a positively-oriented theory of quality-of-life reconstruction following onset of injury (see Figure 1). Central to this model is the notion that adaptation is an evolving longitudinal process that has unique characteristics for each individual. The positive orientation of this model is consistent with recent revisions in the World Health Organization’s (WHO’s) framework for documenting health status and outcomes of services that now includes body systems, activities, and social participation, called the International Classification of Functioning and Disability or ICF (World Health Organization [WHO], 2002). The revised version of the ICF framework also includes a domain on contextual factors that influence social participation in real world environmental contexts of the individual such as home, school, workplace, neighborhood, or community.

**Methods**

**Design**

The ongoing study uses a mixed longitudinal research design integrating quantitative and qualitative components (Tashakkori & Teddlie, 1998). The study was approved by a university institutional review board.

**Participants**

Participants in the ongoing study are adults with acute hand injuries who are receiving outpatient therapy 2–3 times a week for at least 8 weeks (an indicator of severity). Most participants have nerve injuries, tendon injuries, or fractures. A few are in acute recovery stages following surgery for chronic problems. In the ongoing study, purposive sampling is used to recruit participants who are diverse in gender, age, ethnicity, and major occupations. Three to 4 participants are recruited during two cycles a year of a hand therapy fellowship program, adding 6–8 new participants a year to the project database. Usual treatment protocols are followed because the intent is to document the adaptation process as it naturally occurs.

For this article 5 participants from the ongoing study have been selected to compare similarities and differences in physical recovery and psychosocial adaptation, engagement in occupations and relationships, perceived outcomes and expectations, and adaptive problems and strategies as they evolved over time. These persons were chosen by purposive sampling to reflect diversity in gender, age, and major occupations. Pseudonyms are used in referring to participants.

**Data Sources**

Demographic information on participants and their social circumstances was obtained through chart review.

Physical recovery was assessed using standard clinical measures of performance components recommended by the American Society of Hand Therapists (ASHT) that are commonly employed in hand rehabilitation (American Society of Hand Therapists [ASHT], 1992). Additional aspects of physical recovery including function and pain were assessed using the Disabilities of the Arm, Shoulder, and Hand (DASH) instrument developed cooperatively by a number of organizations (Amadio, 1997; American Academy of Orthopedic Surgeons, 1997). This instrument is being widely used in documenting treatment of upper-extremity problems. A recent extensive study of persons with upper-limb conditions revealed a test–retest reliability of 0.96, and construct validity correlations greater than 0.94.

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**Figure 1. Model of Adaptation to Hand Injury**

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0.70 of the DASH with several other measures (Beaton et al., 2001).

Psychosocial adaptation was documented using the Reactions to Impairments and Disability Inventory (RIDI) developed by Livneh and Antonak (1990). This questionnaire has subscales for shock, anxiety, denial, depression, internalized anger, externalized hostility, acknowledgement, and adjustment. Psychometric properties of the RIDI have been investigated using two forms of factor analysis. Subscale reliabilities of 0.75, 0.73, 0.69, 0.78, 0.74, 0.79, 0.77, and 0.85 have been found (Livneh & Antonak, 1998). This instrument has been used with persons who have a variety of physical disabilities, though it has not been used previously in studies of persons with hand injury.

Engagement in occupations and relationships was documented in this study using selected components of the DASH. This quantitative perspective was enriched by data from qualitative Adaptation Interviews conducted using a semistructured interview guide developed for this project and pilot-tested with hand injury outpatients (see Appendix). The Adaptation Interview Guide includes general open-ended questions with prompts to guide discussion of key issues. Questions address (a) what life was like before onset of injury, (b) what changes in life have occurred since injury (or since last interview), (c) changes in major locations visited regularly, (d) resources drawn on in dealing with this experience, (e) views about therapy, and (f) hopes and expectations for the future.

Perceived health and well-being of participants was assessed using selected components of the DASH. Qualitative Adaptation Interviews were also used to examine participants’ views of their current situation as well as their hopes and expectations for the future.

Therapy experience was examined from the perspective of clients, rather than analyzing therapist-generated goals, modalities, and outcomes that have been extensively studied in previous research. Clients’ perceptions of therapy assessed in qualitative Adaptation Interviews included both task and relationship elements (Blackmore, Wright, & Petralia, 1990; Peloquin, 1993).

**Procedures**

Data were collected by hand therapy fellows and occupational therapy graduate students monthly while each client was receiving hand therapy, and quarterly after discharge, for a total of 12 months. Persons collecting data were trained by project faculty, and incoming data were monitored regularly for completeness. Data were recorded and analyzed using an Internet online data management system that was developed for the ongoing study.

**Data Analysis**

Quantitative measures were scored according to criteria developed by their authors. Audiotaped qualitative interviews were transcribed into written text for analysis and checked for accuracy on a sampling basis. Initial analysis of qualitative interview transcripts involved open coding of incoming interviews, as well as use of the constant comparative method to revise coding categories as needed over time (Patton, 2002).

Initial data representation involved development of a computerized Adaptation Trajectory for each participant that integrated longitudinal tracking of selected summary indicators from physical measurements and selected subscale scores from structured questionnaires, as well as identification of key issues identified during qualitative interviews. In developing Adaptation Trajectories, score transformation was performed to allow comparison between scores with different units and in different distributions, and resulting z scores were used to plot individual trajectories (Farketch & Verran, 1994).

An additional level of analysis involved comparison across individual cases to identify similarities and differences in the adaptive process and the impact of personal, occupational, and environmental factors over time. Cross-case comparison of newly enrolled participants was com-

### Table 1. Pain, Total Range of Motion, Depression and Adjustment z Scores

<table>
<thead>
<tr>
<th></th>
<th>Time (month)</th>
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<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Christine</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>2.02 -0.21 -0.24 -0.50 -0.53 -0.53</td>
</tr>
<tr>
<td>TROM</td>
<td>-1.32 -1.14 0.27 0.30 0.90 0.99</td>
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<tr>
<td>Depression</td>
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<td>Adjustment</td>
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</tr>
<tr>
<td>Butch</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>0.41 0.41 -0.43 -1.70 0.06 1.26</td>
</tr>
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</tr>
<tr>
<td>Adjustment</td>
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</tr>
<tr>
<td>Ed</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>-0.05 -0.05 -0.05 -0.05 -0.05 -0.05</td>
</tr>
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<tr>
<td>Adjustment</td>
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<tr>
<td>Alice</td>
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<td>0.50 0.50 0.50 0.50 0.50 0.50</td>
</tr>
<tr>
<td>Adjustment</td>
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</tr>
<tr>
<td>Curtis</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
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</tr>
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<td>-0.71 -0.71 -0.71 -0.71 -0.71 -1.41</td>
</tr>
<tr>
<td>Adjustment</td>
<td>1.34 -0.27 -0.27 -0.27 -0.27 -1.07</td>
</tr>
</tbody>
</table>

*Note. TROM = Total Range of Motion.*
pleted at the end of each hand therapy fellowship program cycle at Texas Woman's University. This process also involved cumulative analysis of all participants in the project database across hand therapy fellowship sessions of the program. Comparison across cases was structured through a peer review process at the end of each fellowship session in which cumulative findings were interpreted from multiple perspectives by hand therapy fellows, graduate students, and outside peer reviewers with expertise in relevant content and methodological areas.

Methods to increase trustworthiness of the ongoing study included prolonged engagement, with persons being interviewed on multiple occasions. Member checks, with participants reviewing and reflecting on summaries of their own data, were completed on a sampling basis. Peer review was also an important element of trustworthiness in which ongoing interpretations were challenged and deliberately viewed in alternative ways.

For this article, project faculty selected 5 participants by purposive sampling to reflect contrasting gender, age, ethnicity, and major occupations. The entire data sets and Adaptation Trajectories of these persons were reviewed in depth by project faculty and graduate research assistants who developed narrative case descriptions for each individual. Case descriptions were reviewed by selected peer reviewers on an individual basis.

Results

There are currently 43 persons in the project database, including 17 women and 26 men. Their ages range from 20 to 79 years, with a mean of 44 years. There are 9 Black persons, 11 Hispanics, 1 Pacific Islander, 1 Greek, and 14 White persons. Seventeen persons were working outside of home at the time of injury, with 10 doing manual forms of work and 7 doing office or supervisory work. Major leisure occupations included activities that require gross motor upper-extremity function such as playing tennis or softball (12 persons), activities that require fine motor upper-extremity function such as craft work or playing a musical instrument (6 persons), and occupations that do not require specific hand function such as involve-

![Adaptation Trajectory for Christine](image-url)
ment in professional organizations or church activities (5 persons).

The 5 participants selected to illustrate ways of studying and representing the adaptation process over time included Christine, Ed, Alice, Curtis, and Butch. Each person is introduced briefly with selected indicators reflected in each person’s adaptation trajectory. Following this overview of the first 4 participants, a detailed examination of Butch is provided as an exemplar case.

**Christine**

Christine is a 42-year-old homemaker, gardener, and craftsperson who injured herself in a table saw accident, resulting in flexor tendon laceration of her right hand. She is married and has a young granddaughter who lives across the street. Christine reported that after the accident “everything has changed....My husband traveled with his work, but due to having to cook and clean and take care of me his life changed along the way.” Her experience was initially dominated by complex regional pain syndrome. After medical treatment for this problem was initiated, Christine began a much more active role in therapy and gradually resumed valued occupations including gardening and playing with her granddaughter. By her 5th month post-injury, Christine had decided to sell her table saw to a friend, although she wanted to continue craft work with her small saw. Although her early expectations were for a full recovery, by the 5th and 6th months in the study Christine had become discouraged and said she needed “an attitude adjustment.”

**Ed**

Ed is a 64-year-old engineer contemplating retirement who is involved in many church activities. He injured his hand in a construction accident that resulted in laceration of the flexor tendon and digital nerve in his left thumb. He is married and has grown children and grandchildren nearby. Ed said, “Before this injury I was very active” doing gardening, working around the house, traveling in his mobile home, and teaching classes and doing evening visitations for his church. “This has shut me down.” Ed indicated that pain was a major factor that limited his energy level and his activity. At work he initially restricted his involvement to supervision but gradually was able to resume more “hands-on sketching.

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**Figure 3. Adaptation Trajectory for Ed**
Figure 4. Adaptation Trajectory for Alice

and drawing.” It was easier to resume his church activities because they did not require hand function and he enjoyed being called “the gum ball man” by children at church. Ed reported that “people I have been dealing with, church as well as work, have been very sympathetic.” His faith was an important resource in adapting to this experience. By his fourth interview Ed reported that “I still have problems with my hands. It doesn’t seem to be getting better to me.” However, he was still looking forward to a camping trip with his wife and said that “I used to be more impatient, but with this injury I’ve become a lot more patient.”

**Alice**

Alice is a 58-year-old epidemiologist who had a synovectomy of her right wrist and extensor tendons, metacarpal phalangeal joint replacement of all digits, and tendon transfer to her thumb due to rheumatoid arthritis. She is married and lives with her husband and her father. Alice reported that before her surgery “I worked full time which I’m not doing at this point, and I’ve been active in several different organizations in various capacities.” After her surgeries and associated precautions, Alice stated that “now I just accept all of those things…. There are things that I simply can’t do and I need to have others do it and that’s it… I can still talk.” During months 4 and 5 post-injury there was a decrease in range and increase in pain that Alice attributed to someone shaking her hand at a professional conference. Alice valued her work and returned on a part-time basis in her 4th month of the study. Her system for managing self-care and household occupations involved reliance on both her husband and her father. “My dad loves to cook, so I put a proposal to him that he do the meals…. Yeah, it’s an unusual arrangement, but he enjoys it.” Her father drove the car for Alice until the 5th month of the study, “The
weekend after I started work I tested out the waters and I’ve been driving ever since.” Alice’s expectations and view of outcomes remained quite consistent throughout her involvement in the study, that may be related to her previous experience with similar surgery on her other hand. She indicated that she is expecting “being able to do most things I’ve done before.” She described herself as “cautious,” but has gradually resumed many tasks by a process she called “testing out the waters.”

Curtis

Curtis is a 20-year-old man whose left hand was injured in a knife fight, lacerating the flexor tendons in the hypothenar area. Before his injury he reported that he was going to school and had a job cleaning up outside at a chemical plant. After work he typically went out with friends until 3:00 or 4:00 in the morning. Curtis was living at home with his parents, but only went there to show-er and eat. He reported that he considered arguing with his parents to be “too disrespectful,” so he would “just get up and leave the house.” Three months after onset of his injury, Curtis was incarcerated in a county facility with his cousin and several of his friends for resisting arrest. Data collection occurred at this facility during Curtis’s later months in the study. Following his injury Curtis’s occupations and relationships changed significantly. Instead of working and going out with friends, Curtis was staying at home where his family “watch over me real tight.” After being incarcerated, Curtis stated that “being in jail things are slow. I sleep a lot. There isn’t much to do.” During this time Curtis said that “the injury has taught me a big lesson. I have to choose my friends better.” While incarcerated, Curtis said that after he got out he would like to get his GED rather than returning to what he described as “a special school for people with bad tempers.” Curtis had a history of solving conflicts by avoidance (leaving home rather

<table>
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<tr>
<th>Time (month)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</thead>
<tbody>
<tr>
<td>Physical Recovery (z scores)</td>
<td></td>
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<tr>
<td>Pain</td>
<td>X</td>
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<tr>
<td>Range of Motion</td>
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<tr>
<td>Psychosocial Adaptation (z scores)</td>
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<tr>
<td>Depression △</td>
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<tr>
<td>Adjustment ▼</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Occupations &amp; Relationships</td>
<td>Job mattered most</td>
<td>Staying at home</td>
<td>Being in jail, Sleep most of the day</td>
<td>TV in activity room</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family encourages me</td>
<td>Family watch over me real tight</td>
<td>Cousin across the hall in jail</td>
<td>Parents visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Family visit once a week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes &amp; Expectation</td>
<td>Hopes to live a better life</td>
<td>Get my hand back</td>
<td>Wants to get GED, find work</td>
<td>Wants to work inside</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Get left-hand good as right</td>
<td>Go to work</td>
<td>Doubts about hand</td>
<td>Have to go some place different</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do something</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Therapy a major focus</td>
<td>Tell me what I’m supposed to do</td>
<td>Tries to work his hand 3–4 times a day</td>
<td></td>
<td></td>
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</table>

Note. The higher the Physical Recovery scores, the greater the Pain and the Range of Motion. The lower the Psychosocial scores, the better the adaptation.

Figure 5. Adaptation Trajectory for Curtis

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than arguing with his parents) or by violent means such as
the knife fight in which his hand was injured. In later inter-
views Curtis identified major changes he would like to
make, such as “living a better life,” getting an inside job,
and finding a new set of friends. He may be able to imag-
ine such alternative possibilities because there was a time
when he was 13 and 14 years old when he lived with his
brother who managed a car lot in another state. This
appears to have been a time when his life experiences were
more positive.

Of the 5 participants selected for this article, Butch was
chosen because of his work experience, family involve-
ment, and leisure occupations to represent an exemplar case that
will be examined in greater depth to illustrate major issues
in the adaptation process.

**Butch**

Butch is a 49-year-old machinist at a jet engine parts fac-
tory and coach for his son’s sports teams. He had a crush
injury to his left wrist at work that included distal radius
and ulnar fractures. He is married and has a 13-year-old
daughter and 8-year-old son. In his first interview Butch
said, “The most important thing that I miss is just being in
sports, as a coach, and missing using my arm to do my work
duties.” He also described many frustrations in performing
daily tasks. “There is a lot of little things and if you are used
to being on your own then you really get frustrated. That
for me was the depressing part of having to rely on some-
body always to be there to help me.”

**Physical recovery.** Butch’s adaptation trajectory reflected
relatively steady increases in physical recovery of range and
strength in his hand, but little improvement in “rotation” of
his forearm that he considered quite disabling in playing
and coaching sports. Initially he was reluctant to use his
hand because of pain. “I didn’t want to move it at all
because I knew it was going to hurt.” During his 3rd month
in the study, he was impatient about having another surgi-
cal procedure. “Doing really well until about the last 2 or 3
weeks and now I am wanting to hurry and get things done.”
In months 5 and 6 Butch’s physical recovery plot reflected
an increase in pain that appears to be related to attempts to
use his hand more.

**Figure 6. Adaptation Trajectory for Butch**
Psychosocial adaptation. In examining psychosocial adaptation, Butch's responses reflected decreasing scores for both depression and adjustment during his first several months in the study. As frustration with attempts to perform new activities occurred in month 4, Butch's depression increased and his adjustment scores decreased, changes that fluctuated in his later months in the study. In qualitative interviews Butch initially described himself as being "depressed because I couldn't get anything done. And you start feeling like you are sort of worthless." In many family sports activities he had to "sit and watch. And I don't like to watch. I want to be a part of it." In dealing with his situation, Butch said "I have always been religious, and everything I believe happens for a reason, so you just sort of take it even if it sets you back a little bit." In later interviews Butch reported being able to do many more things, but he is frustrated with the pace of change. “It's hard to cope with sometimes because I am ready to get on down the road.”

Major occupations. A major occupation for Butch was his work, which was a central focus of his adaptation interviews. At the start of his involvement in the study, he was doing light duty office work including computer tasks and answering the phone. In his second interview Butch reported that "I haven't been back to work, I am off right now just doing therapy 1 1/2 to 2 hours every day." He was frustrated by workers' compensation because "none of the checks come on time...you have to bring money in, and the bills don't stop." By the 3rd month, Butch had returned to work. He and his supervisor jointly worked out ways he could use his knowledge of the shop to monitor work processes by computer. Later Butch indicated that "they have offered me a job inside, so I don't know if I am going to be back on the floor or not...If I do want to go back out in the shop I have the option, but you know right now inside it is pretty nice." In his final interview Butch stated that with his new computer work, "I got sort of a chance to broaden my horizons, I got a few more things in the fire that I can do, instead of going into the shop and being a worker.”

Butch's other major occupations involved playing in a softball league, doing family leisure activities such as swimming and fishing, and coaching his son's football and baseball teams. Splints have allowed him to resume coaching some sports. “This is my football splint, I always wear it to practice, and this is the one that I always wear to the games.” He considered coaching to involve physical performance, and not just directing the team and players verbally. "It's hard to coach when you can't show them how to catch the ball, show them how to be a catcher, show them how to be a shortstop.”

Outcomes and views of the future. Butch's views of outcomes of his adaptive process and his expectations for the future changed over time. Initially he was quite pleased with the progress made in therapy. “When I first came in here my hand was bent and I had no movement in my fingers. In just a week we have really done a lot....I really believe in therapy.” Increasing ability to perform daily tasks was an important gauge of progress. Butch described how he incorporated exercises into his daily routines, using his "little gadgets" to exercise while watching his son's football game, viewing TV, or waiting in traffic where “I am sitting there just pumping up a storm.” Butch reflected on outcomes of the process and views of the future in terms of his life stage. “I think I am probably going to have some limitations, but I think I can live with them....If I was in my twenties it would be entirely different, but I just turned 49 the other day so it's something I can live with.”

By the 4th month, Butch was becoming impatient. “I can do more with my hand than I had in the past, but like if I went swimming or try to do a lot of other things, then it's real limited. I am getting frustrated. I mean, I am almost 5 months after it's happened and I am ready to get on down the road.” In the 5th month he reported that he is “coping much better,” which is reflected in his improved adjustment score. In his final month in the study, Butch reported that “Now things look pretty good and they are starting to move a little faster, so I am coping pretty good right now. If it slows down, that could change.”

Adaptive strategies. Butch's adaptive strategies involved a strong emphasis on being independent and seeking to avoid depending on others for help. If he was unable to perform tasks himself, he often eliminated the task rather than asking for help. “I tried it one handed and then I just gave up.” He considered it very important to participate actively in therapy. “If I just came in for my hour or hour and a half, it's not going to get any better. So I try to really work continuous and just put it all [exercises] into my daily plans.” He learned to use his several different splints as tools. “If I am going to live like the way I am now, then I want some great splints. And then I can use them and cope with the injury as is and go on.”

Discussion

Physical Recovery and Psychosocial Adaptation

Findings of this study indicate that the relationship between physical recovery and psychosocial adaptation is not a simple and direct one, with short-term fluctuations in both processes over time based on specific experiences of individuals. Positive landmark experiences are encouraging,
whereas failure to accomplish desired activities leads to frustration and discouragement. All 5 participants in this analysis were initially quite optimistic about the potential for recovery, though all but Alice became disillusioned between months 4 and 6 by the slow pace of change that did not meet their earlier expectations. A similar process has been found in most other participants in this study, which parallels findings of other research that documents realization of limits to recovery for persons with other kinds of injuries (Brock & Kleiber, 1994).

**Occupations and Relationships**

Valued occupations were an important motivating factor for 4 participants. Gardening for Christine, church work for Ed, professional work for Alice, and coaching for Butch seemed to be important aspects of personal identity that was affirmed through progress in resuming these occupations. Although he did not have a key occupation to return to, Curtis appeared to identify work as having the potential to create a better life for himself. The connections between occupational performance, sense of self, and identity were reviewed in an extensive body of literature by Christiansen (1999).

For each participant, affirmation of relationships with other persons was also a significant source of motivation in the adaptive process. Christine particularly valued activities with her granddaughter, Ed valued travel with his wife as well as involvement in the larger communities of his church and workplace, Alice valued association with professional colleagues as well as daily activities and leisure occasions with her husband and father, and Butch valued sports with his family. After his injury Curtis valued the support provided by family and a few of his friends, though he recognized that other friends were a source of trouble.

**Outcomes and Expectations**

Through participation in daily life activities over time, Christine, Ed, Curtis, and Butch all came to the realization that there were likely to be lasting limitations in use of their hands after early optimism about full recovery. This process seems to be an experiential one that complements verbal information persons are given by health care providers about their prognosis and progress. Developing reasonable hopes for the future through daily life experiences following onset of disability can be viewed in terms of Kegan’s (1982) classic definition of hope as a dialectic between limits and possibilities. The evolving views of the future of participants in this study between limits and possibilities is similar to that of persons with other disabilities (Spencer, Davidson, & White, 1997). It is noteworthy that Alice, who had prior experience with surgery for arthritis, had a more consistent view of reasonable expectations for recovery.

**Adaptive Issues and Strategies**

Despite significant differences in the lives of Christine, Ed, Alice, Curtis, and Butch, all five had to deal with the classic adaptive issue of needing help from others. Because of the importance of independence to him, Butch found this depressing and frustrating. However, Christine readily accepted help from her husband and worked closely with him in deciding what activities she could resume over time that allowed him to return to his previous routines. In contrast to reliance on a single key individual, Ed received assistance from many persons including his wife and son, as well as groups of associates at church and at work. Alice developed a household management system involving her husband and father, as well as relying on work associates. Curtis did not have a regular support system, though he appreciated his family driving him to therapy and visiting him in jail. He described himself as “trying to be as independent as possible” and “get over this quickly.” These differences between participants might be characterized as independent versus interdependent adaptive styles that strongly shape the overall adaptive process of each individual. Despite broadening of views about independence and interdependence for persons with disabilities (Dunn, 1995), many health care providers continue to value and expect independence in their clients and spend relatively little time teaching them how to collaborate well with others in performing occupations.

**Connections Between Aspects of the Adaptive Process**

This analysis revealed the complexity of relationships between physical recovery, psychosocial adaptation, engagement in occupations and relationships, and views of the future for different individuals. The need to examine, rather than assume, the nature of relationships between body systems, activity capabilities, and social participation in real world environmental contexts is a major focus of the framework for conceptualizing services and outcomes advocated by the WHO (2002) in the International Classification of Functioning and Disability. The contrasting cases compared here illustrate many factors that influence the ability of persons to return to valued occupations and relationships in their own local worlds. The circumstances of Curtis also illustrate the ambivalence and difficulties of persons who may not have an established set of occupations and relationships that are accepted by society as well as valued by the individual. Each of the persons examined here typify kinds of clients found in hand therapy practice, who have different kinds of office or manual work, indoor or outdoor...
leisure activities, personal relationships with individuals and with groups, and contrasting adaptive strategies for dealing with difficulties.

Implications

Findings of this research suggest ways that hand therapy can incorporate the mind and spirit as well as physical aspects of the hand, using the words of Brand (1988). This incorporation can occur by connecting rehabilitation experience to clients’ daily lives and to the occupations and relationships that are important aspects of their identity. The experiences of Christine, Ed, Alice, Curtis, and Butch reveal that important motivating occupations often include things in addition to work, which is a much-emphasized outcome, a finding that supports the growing call for occupation-based therapy (American Occupational Therapy Association [AOTA], 1999).

This research also supports the belief that including the mind and spirit in hand rehabilitation requires individualization of the interpersonal aspects of therapy in ongoing conversations with clients, which can be incorporated with use of standardized treatment protocols and modalities. The study illustrates the importance of how a person’s adaptation trajectory evolves over time, with recognition that the process of developing reasonable hopes for the future involves a dialectic between limits and possibilities as they are discovered by clients through experience. Most participants in this study valued opportunities to talk with researchers about their injury and rehabilitation experience. Therapists may choose to use selected instruments from this study to foster interaction periodically with their clients about such issues. None of the participants in this study reported use of formal counseling as a resource in adapting to their injury experience. However, it would be desirable to have counseling resources identified in advance to which persons could be referred.

This study also has implications for future research. A holistic perspective that documents relationships between physical and psychosocial recovery and the domains of social participation and environmental contexts is consistent with trends in studying service outcomes for persons with disabilities (Whittenweck, 1994; WHO, 2002). Qualitative methods offer a way to understand social participation in daily life settings from the perspective of the individual involved rather than from the outsiders’ perspective that dominates much research in the medical tradition, (Kleinman, 1988). In the qualitative tradition, the ability to examine individual adaptive experience in depth over time provides a richness of perspective not found in studies based on large homogeneous groups of clients and aggregate data (Morse, Swanson, & Kuzel, 2001). This study provides evidence regarding the usefulness of a longitudinal view of adaptive experience as perceived by persons with hand injury, as well as focusing on outcomes valued by service providers and reimbursement sources. It has also established the feasibility of documenting and studying the qualitative aspects of hand injury rehabilitation in systematic and credible ways.

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Appendix

Adaptation Interview Guide

Qualitative interview questions are asked in an open-ended way to let respondents identify what is important to them. Prompts are used only if needed to elicit target information.

(1) Please tell me what your life was like before your hand injury.

prompts: What activities were you doing regularly?
What relationships were most important to you?
What mattered to you in life?

(2) What changes in your life have occurred since your hand injury (or since we last talked?)

prompts: Changes in activities and why?
Changes in relationships and why?
Changes in what matters most and why?
Are there any things you are now doing that you could not do before? How have you managed to begin doing these things?

(3) What are the major locations that you are in regularly?

Has your hand injury led to changes in these settings?

prompts: Home and neighborhood?
Work?
Leisure settings?
Could you tell me more about where you (work, do valued leisure activities, etc.)

(4) What resources have you drawn on in dealing with this experience?

prompts: Self-reliance and determination?
Faith or spiritual beliefs?
Family?
Friends or coworkers, etc.?
Formal help from agencies?

(5) What are your views about therapy?

prompts: Positive benefits?
Things you wish had gone differently?

(6) What are your hopes for the future?